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CLAIMS

What is claimed is:

1. Apparatus comprising:
a diode-pumped, solid state laser comprising a lasing medium comprising at least one surface through which said laser is pumped; and
at least one diamond plate in thermal contact with said at least one surface.
2. Apparatus according to claim 1, wherein said at least one diamond plate is cooled remotely from the area of said thermal contact with said at least one surface.
3. Apparatus according to claim 1, further comprising at least a second diamond plate in thermal contact with a second surface of said lasing medium.
4. Apparatus according to claim 2, wherein said at least one diamond plate is cooled by means of at least one of convection and conduction.
5. Apparatus according to claim 1, wherein said laser is end-pumped.
6. Apparatus according to claim 5, further comprising a second diamond plate in thermal contact with a surface of said lasing material distant from that through which said laser is pumped.
7. Apparatus according to claim 6, wherein the lasing beam is output through said second diamond plate.
8. Apparatus according to claim 1, wherein said laser is side-pumped.
9. Apparatus according to claim 1, wherein an area of said at least one diamond plate that is in thermal contact with said at least one surface is optically polished.
10. Apparatus according to claim 1, further comprising a layer of a thermal conductive material between said at least one surface and said at least one diamond plate.
11. Apparatus according to claim 10, wherein said thermal conductive material has a refractive index that approximately matches a refractive index of said at least one diamond plate.
12. Apparatus according to claim 1, wherein the location of said diamond plate is such that the direction in which said laser is pumped and the direction in which said laser is cooled are essentially co-linear.
13. Apparatus according to claim 1, wherein a plurality of segments of said lasing medium are disposed in proximity to each other, and said at least one diamond plate is disposed between two adjacent segments, and in thermal contact with said segments.

14. Apparatus according to claim 13, wherein said laser is side-pumped through at least one of said segments and essentially parallel to the plane of said at least one diamond plate.
15. Apparatus according to claim 13, wherein said laser is end-pumped through said plurality of segments and through said at least one diamond plate.
16. Apparatus according to claim 15, wherein the thicknesses of said segments through which said end pumping is performed increase essentially according to the depth through which said pumping passes.
17. Apparatus according to claim 1, wherein said lasing medium is Nd:YAG.
18. Apparatus according to claim 1, wherein said lasing medium is Nd:YVO₄.
19. Apparatus according to claim 1, wherein said at least one diamond plate is anti-reflecting at the wavelength at which said laser is pumped.